

Remarks:

This amendment is submitted in an earnest effort to advance this case to issue without delay.

The claims have been amended to recite the backflushing step described at lines 22 - 29 of page 5 of the Substitute Specification. In addition the claims are limited to the use of waste PET material containing dirt and the particular problems encountered with this recycled material.

In the recycling of dirt-containing PET material, typically chopped-up bottles and the like, it is necessary to avoid overtreatment of the material, since if it is heated and worked too long it becomes worthless in that a product made from it is very weak. Another problem is that the starting waste carries a certain amount of water, which can be removed by depressurizing the extruder, but unfortunately this does not produce usable granules. Also the waste material invariably carries dirt, which here is meant to mean particles that do not dissolve and that would create unacceptable inclusions in the finished product.

The instant invention as defined in the current claims is aimed at these various problems. It is aimed at producing a high-quality product from recycled waste with a minimum of impurities. This is done according to the method outlined in new claim 16,

which not only specifically states that the starting material is waste, but also describes the backflushing system used to clean the filter sieve. Such a method achieves the desired results by several means. First of all the degassing of the extruder eliminates the need for a costly pretreatment, typically by precrystallizing and drying. In addition the use of a filter eliminates the dirt in the melt, and the backflushing using the melt involves only a small loss of melt, which carries off the dirt, and makes it possible to restart the system with virtually no loss of production time, especially when the backflushing operation is controlled and/or initiated by the system that monitors upstream and downstream pressures on the filter sieve. Clearly when the filter sieve starts to clog, the pressure differential increases to signal when it is time to backflush. There is therefore no need to swap out the filter.

The claims were rejected on five references:

US 6,409,949 of Tanaka does not have a double-screw extruder followed by a filter. Furthermore this reference relates to polyester, not the PET waste product specifically recited in the main claim. The polyester is converted into pellets, an altogether different product. The process here has no dirt in the starting product, so generally this is an altogether different system working with a virgin starting product.

US 5,643,515 of Davies describes a method of making stretched filaments, but once again there is no double-screw extruder followed by a filter. The person skilled in the art would

know that converting PET into filaments requires the breaking of the polymer chains which is basically impossible with recycled PET. In this system it is necessary to work mainly with virgin PET to get a usable end product.

US 3,032,822 of Maddock describes a general method of controlling pressure in an extruder, but no backflushing of a filter is provided. Here the rotation rate and a pressure are monitored. A perforated sieve plate is used mainly to increase back pressure, but here the plate is simply exchanged if it gets clogged. This reference does not relate to making packing strips from PET waste, and has nothing resembling the now-claimed backflushing step, so it is irrelevant to the instant invention.

US 6,153,093 of Bentivoglio describes backflushing a filter, but does not suggest using the melt from the extruder. A complex system is described that creates chambers flanking the filter that can be used to backflush it. Nothing suggests using the actual melt being processed for backflushing.

US 4,849,113 of Hills describes a belt filter in a different context, especially as it makes backflushing unnecessary. Instead there is a complex belt-advance system that must prevent the accidental introduction of air into the melt. Again no backflushing with the melt is shown or suggested.

Thus the instant invention as defined in the claims is allowable under §102 and §103 over the cited art. Notice to that effect is earnestly solicited.

Respectfully submitted,  
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